

Action Research: Improving Students' Academic Achievement Through Effective Peer Learning

Abera Beyu*

Department of Agricultural Economics, Raya University, PO box 92, Maichew, Ethiopia

Abebeaw Abebe

Department of Agricultural Economics, Raya University, PO box 92, Maichew, Ethiopia

Abstract

The major purpose of this action research was to improve student achievement through effective implementation of peer learning in animal science department first year student. Specifically, this research was intended to improve student's awareness about peer learning, distinguish the major challenges that hinder the implementation of peer learning in the department, find and apply possible strategies that help to improve student's academic achievement. Both primary and secondary data sources were used to collect qualitative and quantitative types of data. The primary data were collected via questionnaires, interview and observations. Secondary sources of data were collected from guidelines; journals and students' achievement in the previous semester report. Descriptive statistics like frequency, percentage and mean were used to analyze the data. According to the result, unequal sharing of tasks among group members, problem of group organization/formation, lack of students' awareness to work in group, lack of preparation and shortage of reference materials were found to be the major problems that hinder student peer learning. In order to alleviate these challenges the researchers have implemented four suggested solution. This were giving different responsibility to each and every member of the group to minimize the unequal sharing of tasks among group members, re-organizing the group structure of students, improving the awareness of students about peer learning and providing supportive materials that can help the students to prepare themselves participation in peer learning. Finally, the researchers observed that student academic achievement is significantly improved.

Keywords: Peer learning, achievement, student

1. INTRODUCTION

1.1. Background of the Study

Education is the only instrument to bring about desirable economic, social and political change. In this era of globalization and technological revolution, education is considered as a first step for every human activity. It plays a vital role in the development of human capital and is linked with an individual's well-being and opportunities for better living (Battle and Lewis, 2002). The development of a nation depends upon the number educated citizens who have access to quality education (Anwar et al., 2016). Generally, it is the backbone of societal transformation in all aspects of life (Muhammed, 2012).

The primary purpose of teaching at any level of education is to bring a fundamental change in the learner (Tebabal & Kahssay, 2011). To meet this purpose, schools should be encouraged to adopt pedagogical practices that promote the active involvement of students learning. One practice that has received widespread coverage over the past decades is cooperative learning. It refers to an instructional method in which students at various performance levels work together in small groups toward a common goal. It is a pedagogical practice that helps the students to gain and create both academic and social relationships as well as to accomplish shared. Farzaneh and Nejadansari (2014) conceptualized peer learning as a victorious teaching approach in which learners of diverse abilities, talents and backgrounds work together in small groups to attain a common goal.

Many studies have shown that students' academic achievement was better for students who were involved in a peer learning environment, and the effects of peer learning on student achievement can be remarkable (Kamuran et al., 2008; Zakaria et al., 2014). Moreover, it develops social skills such as communication, presentation, problem solving, leadership, delegation and organization (Zakaria et al., 2010). Looking for all the above benefits, Ethiopia introduced peer learning strategy as a means of instruction in all levels of education from upper primary schools to colleges and universities in 2010 (Woldemariam and Girmay, 2015). Since then, all public schools and universities have been practicing cooperative learning by organizing their students in a team consisting of 5 members from different academic achievements (higher, medium and lower achievers). Such kind of students organization is called "one-to-five group" in local name.

Even though, it is new and young in its age Raya University in general and college of Agriculture and Natural Resource specifically accepted the responsibility for implementing cooperative learning strategies in order to improve students' learning opportunities. However, as the teaching staff members of the college, the researcher observation implies that cooperative learning implementation and its fruitfulness is not as expected due to the large class size, classroom arrangement, lack of resources, and student's negative attitude towards 1 to

5groups. Therefore, it is essential and timely issue that conducting an action research on peer learning in order to identify its challenges and alternative solution for better practices and for improving students academic achievement in college of agriculture and natural resource specifically animal science department.

1.2. Statement of the Problem

Peer learning is one of pedagogical practice that has attracted much attention over the last three decades because of a large body of research that indicates students gain both academically and socially when they have opportunities to interact with others to accomplish shared goals (Johnson, 2002). Peer learning promotes student learning and achievement (Cockrell et al. 2000) increase the development of critical thinking skills, and promote greater transfer of learning (Brandon and Hollingshead, 1999). Peer learning also aids in the development of social skills such as communication, presentation, problem solving, leadership, delegation and organization (Cheng and Warren, 2000). Moreover, it is very essential for job skills that are required in the 21century are those skills that students need to possess in order to succeed in the present and future workplace. These skills include creativity, critical thinking, communication, collaboration, literacy competency, flexibility, initiative, productivity, leadership, and responsibility.

In Ethiopia, peer learning strategy is implemented as a means of instruction in all levels of education from upper primary schools to colleges and universities since 2010. Although peer learning has been implemented for more than eight years in Ethiopian Higher Education Institutes, the program has not been effective as it expected. Department of animal science is one of the department in college of agriculture and natural resource in Raya University. The department accepted the responsibility for implementing peer learning strategies in order to improve students' learning outcome. The target goal of student one to five peer learning in the animal science department in particular and in the university in general was to enable 50% of the student to score above 3 average grade point, to enable all students to score above 2.5 GPA for semester result and to reduce student's academic dismissal rate. However, only 9.8% of student's have scored above 3 average grade point, 30% are below 2 point and 25% are warned and academic dismissal. This is a wide gap between the proposed to achieve and the actual result. Though the department students have tried to learn cooperatively for a semester, the goal of the program can't achieve as the desired objective and its fruitfulness is not as expected. Therefore, the major purpose of this action research is to improve student achievement through effective implementation of peer learning by addressing the above issues.

1.3. Research Questions

The researchers designed the following basic questions to investigate the problems and make proper intervention to improve student achievement; this action research project will answer the following basic questions:

1. What are the major factors affecting the practices of cooperative learning in the department?
2. How cooperative learning practices will be improved for the future?

1.4. Objectives of the Study

The general objective of this action research is to improve student achievement through one to five peer learning. The specific objectives are.

- ❖ To distinguish the major challenges that hinders the implementation of peer learning in the department and
- ❖ To find and apply possible strategies that help to improve student's academic achievement.

1.5. Significance of the Study

The findings of this study are believed to be useful to students, university and for practitioners. This project enables the research team to develop academic professional. Moreover, the study will serve as a reference document for other researchers.

2. RESEARCH METHODOLOGY

2.1. Description of the Study Area

Raya University is one of the 11 newly established public Universities in Ethiopia in 2017 with the aim of teaching and learning, conducting research and providing community services to the surroundings. It is located at 668 Km from Addis Ababa (capital city of Ethiopia) and 126km from Mekelle, the capital city of the Tigray.

2.2. Research Design

The researchers use the descriptive research design. This method was selected because it enables to investigate the way how to improve student's awareness about peer learning, challenges of peer learning and based on the finding it helps to improve the student's academic achievement and implementation of peer learning at the department based on the information secured from the respondents.

2.3. Sources of Data and Methods of Collection

Both primary and secondary data sources were used to collect qualitative and quantitative types of data. The primary data were collected via questionnaires, interview and observations. The weakness of one data collection method will be improved by the strength of another because of this different methods of data collection were implemented in this study. A questionnaire was containing both close ended and open-ended types to collect data from students. The questionnaire was distributed for all the department students. Direct classroom observation was conducted to observe the extent of student's participation in peer learning and the existing challenges that hinder the implementation of peer learning. In order to supplement the data that is obtained from the primary sources, secondary sources of data such as guidelines, journals and students' achievement in the previous semester were used in this study.

For collecting data, the researchers informed the department about the issues and also research group make clear the idea for the student about the research to engage freely in the research. From the beginning of data, collection to the intervention action made by researchers in the classroom to improve the achievement of student's information was accountably communicated.

2.4. Target population, Sample and Sampling Techniques

These action researches were conducted in department of Animal Science College of Agriculture and Natural resource of Raya University. The target population of this study was regular first year undergraduate students. Regarding sample, all first year students of animal science department were participated in the research.

2.5. Methods of Data Analysis

The data was analyzed by using descriptive statistics like frequency, percentage and mean to achieve the expected objectives of the study. After analysis, the result was presented using tables, figures and graph.

3. DATA ANALYSIS AND PRESENTATION

This part of the paper has two sections. The first section deals with the background of the students (sex and age of student) while the second section deals with about student's peer learning.

3.1. Background of students

A total of 84 students from department of Animal Science were considered for this research and 84 questionnaires were distributed to the students. From the distributed questionnaires 80 were returned after filled by respondents. This implies to the rate of return of the questioner was 95.24 percent.

From the total sample size of respondents filled the questionnaire properly, 47.5% of the respondents are male and the remaining 52.5% of them are female (Table 1). This shows that the number of females and male student are almost the same and there is a possibility of keeping gender balance while group formation to reduce dominance of one sex over the other. As depicted in the item 2 of the same table, pertaining to student's age, majority 68 (85%) of them were found in between the age group of 18 to 25 and where as about 12.5% and 2.5% of them were found above 25 and below 18, respectively. This implies that students were at a good age status to understand each other while they carry out their tasks by using peer learning.

Table 1: Personal background of the students

No	Characteristics		Sample Respondents (80)	
			Frequency	Percent
1	Sex	Male	38	47.5
		Female	42	52.5
2	Age	<18	2	2.5
		18-25	68	85
		> 25	10	12.5

Source: survey result, 2018

Table 2: Student GPA result by sex

Student GPA score	Male		Female	
	Frequency	Percentage	Frequency	Percentage
3 GPA and above	9	11.25	1	1.25
Between 2.5 GPA and 3	3	3.75	0	0
Academic dismissal	2	2.5	11	13.75

Source: survey result, 2018

The above table indicated that, only 1 female student has scored above 2.5 GPA. Among total 13 academic dismissals, the majority 12 students were females. This indicated that female students were lower achievers than

males.

3.2. Interest of Students in Peer Learning

The students were asked about their interest in participating in peer learning and 57.5% of them were interested in participating in peer learning while the rest 42.5% were not interested in peer learning because they perceived that they are shouldering burdens of poorly performing students. They also think it consumes their time and it is better in studying individually. Moreover, they reflect that some member of the group is not actively participating in peer learning (Figure 1).

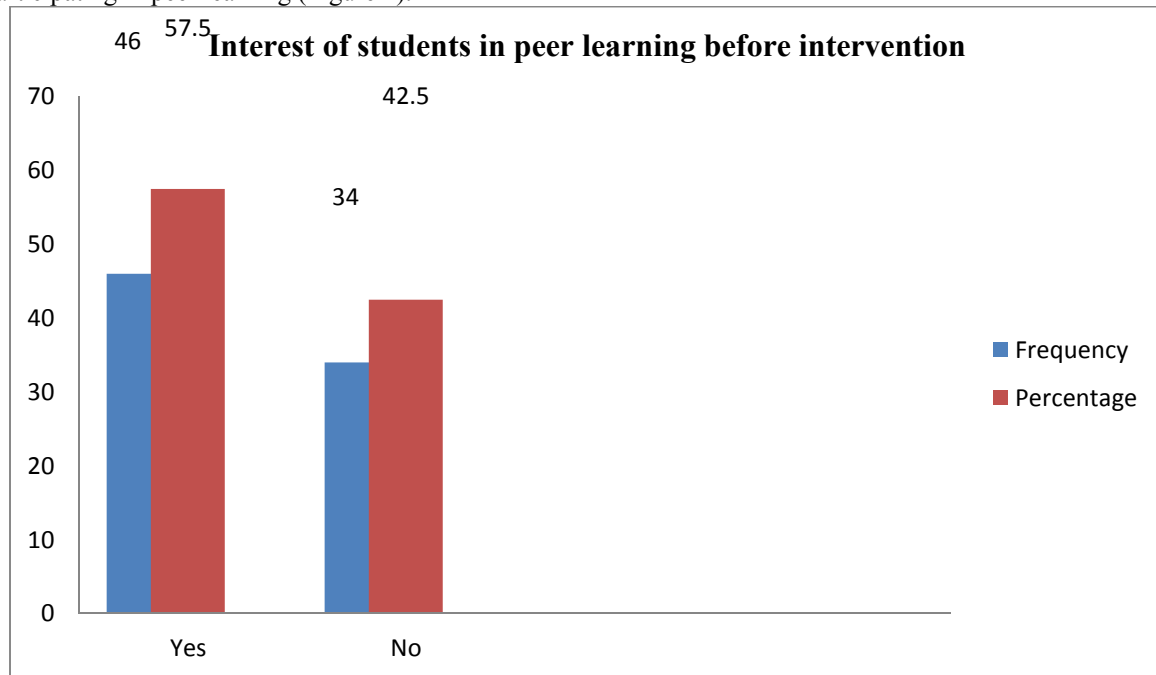


Figure 1: Interest of students in peer learning

3.3. Problems in Peer Learning Practices

The practices of peer learning may not be free of problems. Several research findings indicated that there are several challenges in cooperative learning practices. For instance, students developed in a very competitive environment as well as students who have poorly developed social and emotional skills consider peer learning activities as a treat or challenging (F. Ashman, 2003).

Similarly in this study, in order to indentify the problems and also to distinguish to what extent these problems are affecting cooperative learning practices, about ten variables were presented for the students to rate on the issues saying; very high (5), high (4), medium (3), low (2) and very low(1). Moreover, the total horizontal weight score which is the sum of rank order frequencies multiplied respectively by 5 for the very high, 4 for high, 3 for medium, 2 for low and 1 for very low was calculated and used to rank the problems. Accordingly, the rank of each problem was presented in Table 3 below.

Table 3: Problems in cooperative learning practices

No	Problems	Very high(5)	High(4)	Medium(3)	Low(2)	Very low(1)	Total weight	Rank position
	Lack of awareness	33	16	16	7	8	299	3 rd
	Lack of support	4	7	19	32	18	187	9 th
	Problem of organization	30	21	17	8	4	305	2 nd
	Language problem	10	10	20	24	16	214	6 th
	Unequal sharing of tasks among group members	34	18	14	11	3	309	1 st
	Lack of preparation	27	18	13	14	8	282	4 th
	Uncomfortable class seating	7	6	17	31	19	191	8 th
	Shortage of time	3	15	21	24	17	203	7 th
	Poor academic background	2	10	20	28	20	186	10 th
	Shortage of reference materials	21	12	20	14	13	254	5 th

As indicated in Table 2 above, the result of the study showed that from about ten expected problems in peer learning the students have been stated frequently the following factors as challenges that hinder learners not to participate actively in peer learning:

- ☞ 1st Unequal sharing of tasks among group members
- ☞ 2nd Problem of group organization/formation,
- ☞ 3rd Lack of students' awareness to work in group
- ☞ 4th Lack of preparation
- ☞ 5th Shortage of reference materials
- ☞ 6th Language problem
- ☞ 7th Shortage of time
- ☞ 8th Uncomfortable class seating
- ☞ 9th Lack of support
- ☞ 10th Poor academic background

3.4. Proposed Intervention Mechanisms

Depend on the result of the study, considering time and resource, the research team agreed to intervene on the first four problems that frequently stated by students as factors that hinder learners not to participate actively in peer learning. The research team also proposed different actions to be taken in order to improve the student's participation in peer learning in general and their academic achievement in particular under this section. The following possible solutions were identified for the first four problems that frequently stated by students to improve the effectiveness of peer learning to improve their academic achievement.

- a. Giving different responsibility to each and every member of the group to minimize the unequal sharing of tasks among group members
- b. Re-organizing the group structure of students
- c. Improving the awareness of students about peer learning
- d. Providing supportive materials that can help the students to prepare themselves participation in peer learning

4. IMPLEMENTATION OF THE INTERVENTION MECHANISMS

This section discusses how and when each proposed solution is implemented.

Finding -1: Improving awareness through awareness creation training

Lack of awareness about peer learning was one of the major factors affecting the participation of students in peer learning and hence it has been one of the causes for low achievement of students in the department. As a result, awareness creation discussion was held with students for 2hour for each section on Thursday 18/08/2010.

Finding-2: Creating new group

The result of the study also showed that arrangement of students in the group was also found to be one of the factors affecting peer learning. In first semester group organization was based on the grade 12 result, sex and region. However, the result of the study showed that this formation was not effective and there was problem in group formation. Therefore, the research team was formed new group structure which was based on the first semester cumulative GPA, interest of the student, sex and region from where they come. This was done on 18/08/2010 for 1hr.

Finding-3: giving tasks for each member

Unequal sharing of tasks among group members was one of the problems that hinder the participation of the students in peer learning. Therefore, the research team intervenes to this problem by giving different roles for each group members so as to improve the effectiveness of peer learning to improve their academic achievement. This was done on 18/08/2010 for 1hr by giving different roles for each and every member of the group as indicated here under.

- ☞ **Leader:** a group leader provides direction, instructions and guidance to a group of individuals, for achieving their goal.
- ☞ **Facilitator:** A facilitator of a group who helps a group members to understand their common objectives and assists them to plan how to achieve these objectives; in doing so, the facilitator remains "neutral" meaning he/she does not take a particular position in the discussion. Responsible for getting the group started, keeping it on task, and involving all members.
- ☞ **Note taker:** a student who takes notes during peer learning activities
- ☞ **Reporter:** a student who is responsible for summarizing group decisions and for presentation
- ☞ **Timekeeper:** a student who is responsible for keeping group on task and on time particularly with in-class and other activities.

Finding-4: providing different supportive materials

The finding of the study also showed that lack of preparation was another problem that hinders the effective implementation of peer learning. Therefore, the research team was agreed with student to support them by providing different supportive materials like worksheet, homework, assignment, etc, to help them for preparation in peer learning before coming into the class. This can be done by asking all instructors to prepare and provide worksheet for student's timely. This was done on 25/08/2010 for 2hr. In doing so, all the instructors provided task to be done in peer learning groups as much as possible that can help them for improving their academic achievement.

The following photos highlight some of the activities that were conducted while implementation of research findings.





5. EVALUATION OF THE INTERVENTION

After intervention had take place, the research team tried to evaluate the result of each intervention and the result of evaluation was presented here under:

Result on lack of awareness: After two hour training and interactive discussion with students about their awareness towards peer-learning on their academic achievement their awareness was raised from 65% to 95% and they were interested to participate in peer learning to improve their academic achievement.

Result on problem of group formation: After re-organizing the group all students were responded that they become happy and satisfied with the new group arrangement. They also asked to have continuity for the future.

Result on unequal sharing of tasks:

After giving different role for each member of the network all students in each group was satisfied and they said that responsibility sharing can improve group member's participation, encourage low academic achiever, develop self confidence and communicative skills. It also helps the students to help each other rather than relying on one or two student in the group to do the work; decreasing negative classroom behaviors, such as not paying attention, not listening, or disturbing and having a stronger self-esteem between them.

In general, after intervention had take place, the research team tried to evaluate the result of the project on student's academic achievement students in terms of their GPA and the result of evaluation was presented here under:

Table 2: General evaluation of the project on student academic achievement

Student GPA score	Before intervention		Asfter intervention	
	Frequency	Percentage	Frequency	Percentage
3 GPA and above	10	9.8	38	46
Between 2.5 GPA and 3	3	2.94	30	36
Academic dismissal	13	12.74	0	0

As indicated in table 4 above, the result of students who scored above 3 were increased from 10(9.8%) to 38(46%). While the number of students whose scored above 2.5 was increased from 13(12.74%) to 68(82%). This indicates that effective implementation of peer learning improves the achievement of students. This also shows that there was a positive change after the implementation of effective peer learning.

6. CONCLUSION

The finding of this study revealed that implementation of student peer learning in 1st year animal science department was affected by many factors. As a result peer learning can't achieve as the desired goal. The most problems that frequently stated by respondents were unequal sharing of tasks among group members, problem of group organization/formation, lack of students' awareness to work in group and lack of preparation. In order to overcome those challenges and improve academic achievement of student's thorough effective implementation of peer learning, the research team has undertaken different actions. The actions were, giving different responsibility to each and every member of the group to minimize the unequal sharing of tasks among group members, re-organizing the group structure of students, improving the awareness of students about peer learning and providing supportive materials that can help the students to prepare themselves participation in peer learning. All the actions were implemented and evaluated accordingly to the action design.

As the evaluation result showed, all students were responded that they become happy and satisfied with the

new group arrangement. They also asked to have continuity for the future. After giving different role for each member of the network all students in each group was satisfied and enable the students to help each other rather than relying on one or two student in the group to do the work; decreasing negative classroom behaviors, such as not paying attention, not listening, or disturbing and having a stronger self-esteem between them. At the end, the research team found that, there is a fruitful result and a significance improvement on student's academic achievement due to the effective implementation of peer learning.

Depend up on the findings; the following recommendations are made;

- In order to sustained student peer learning, it requires a continuous and constant follow up. This can be made by collaboration with the teacher, network mentor and the department.
- All course instructors should encourage and support peer learning through giving worksheet/questions/other point of discussion to students.
- Finally, it is recommended that, all other department and colleges across the university should implement and improve the academic achievement of their students through effective peer learning.

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